



1) GENERAL INFORMATION:

(i) APPLICANTS: Knuth, Alexander; Jager, Elke; Chen, Yao, Scanlan, Matt; Gure, Ali, Old, Lloyd, Ritter, Gerd

(ii) TITLE OF INVENTION: ISOLATED PEPTIDES CORRESPONDING TO AMINO ACID SEQUENCES OF NY-ESO-1, WHICH BIND TO MHC CLASS I AND MHC CLASS II MOLECULES, AND USES THEREOF

(iii) NUMBER OF SEQUENCES: 15

(iv) CORRESPONDENCE ADDRESS:
(A) ADDRESSEE: FULBRIGHT & JAWORSKI LLP
(B) STREET: 666 Fifth Avenue
(C) CITY: New York City
(D) STATE: New York
(E) COUNTRY: USA
(F) ZIP: 10158

(v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Diskette, 3.5 inch, 144 kb storage
(B) COMPUTER: IBM
(C) OPERATING SYSTEM: PC-DOS
(D) SOFTWARE: Word

(vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: 09/165,546
(B) FILING DATE: October 2, 1998
(C) CLASSIFICATION: 530

vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: 09/062,422
(B) FILING DATE: April 17, 1998

(viii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: 08/937,263
(B) FILING DATE: September 15, 1997

(ix) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: US 08/725,182
(B) FILING DATE: October 3, 1996

(x) ATTORNEY/AGENT INFORMATION:
(A) NAME: Hanson, Norman D.
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(C) REFERENCE/DOCKET NUMBER: LUD 2166.4 CIP (09807811)

(xi) TELECOMMUNICATION INFORMATION:
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(2) INFORMATION FOR SEQ ID NO: 1:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 752 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

| | | | | | | |
|---|------------|------------|------------|------------|-----|-----|
| ATCCTCGTGG | GCCCTGACCT | TCTCTCTGAG | AGCCGGGCAG | AGGCTCCGGA | GCC | 53 |
| ATG CAG GCC GAA GGC CGG GGC ACA GGG GGT TCG ACG GGC GAT GCT | | | | | | 98 |
| Met Gln Ala Glu Gly Arg Gly Thr Gly Ser Thr Gly Asp Ala | | | | | | |
| 5 | 10 | | | | 15 | |
| GAT GGC CCA GGA GGC CCT GGC ATT CCT GAT GGC CCA GGG GGC AAT | | | | | | 143 |
| Asp Gly Pro Gly Gly Pro Gly Ile Pro Asp Gly Pro Gly Asn | | | | | | |
| 20 | 25 | | | | 30 | |
| GCT GGC GGC CCA GGA GAG GCG GGT GCC ACG GGC GGC AGA GGT CCC | | | | | | 188 |
| Ala Gly Pro Gly Glu Ala Gly Ala Thr Gly Gly Arg Aly Pro | | | | | | |
| 35 | 40 | | | | 45 | |
| CGG GGC GCA GGG GCA GCA AGG GCC TCG GGG CCG GGA GGA GGC GCC | | | | | | 233 |
| Arg Gly Ala Gly Ala Ala Arg Ala Ser Gly Pro Gly Gly Ala | | | | | | |
| 50 | 55 | | | | 60 | |
| CCG CGG GGT CCG CAT GGC GGC GCG GCT TCA GGG CTG AAT GGA TGC | | | | | | 278 |
| Pro Arg Gly Pro His Gly Ala Ala Ser Gly Leu Asn Gly Cys | | | | | | |
| 65 | 70 | | | | 75 | |
| TGC AGA TGC GGG GCC AGG GGG CCG GAG AGC CGC CTG CTT GAG TTC | | | | | | 323 |
| Cys Arg Cys Gly Ala Arg Gly Pro Glu Ser Arg Leu Leu Glu Phe | | | | | | |
| 80 | 80 | | | | 90 | |
| TAC CTC GCC ATG CCT TTC GCG ACA CCC ATG GAA GCA GAG CTG GCC | | | | | | 368 |
| Tyr Leu Ala Met Pro Phe Ala Thr Pro Met Glu Ala Glu Leu Ala | | | | | | |
| 95 | 100 | | | | 105 | |
| CGC AGG AGC CTG GCC CAG GAT GCC CCA CCG CTT CCC GTG CCA GGG | | | | | | 413 |
| Arg Arg Ser Leu Ala Gln Asp Ala Pro Pro Leu Pro Val Pro Gly | | | | | | |
| 110 | 115 | | | | 120 | |
| GTG CTT CTG AAG GAG TTC ACT GTG TCC GGC AAC ATA CTG ACT ATC | | | | | | 458 |
| Val Leu Leu Lys Glu Phe Thr Val Ser Gly Asn Ile Leu Thr Ile | | | | | | |
| 125 | 130 | | | | 135 | |
| CGA CTG ACT GCT GCA GAC CAC CGC CAA CTG CAG CTC TCC ATC AGC | | | | | | 503 |
| Arg Leu Thr Ala Ala Asp His Arg Gln Leu Gln Leu Ser Ile Ser | | | | | | |
| 140 | 145 | | | | 150 | |
| TCC TGT CTC CAG CAG CTT TCC CTG TTG ATG TGG ATC ACG CAG TGC | | | | | | 548 |
| Ser Cys Leu Gln Gln Leu Ser Leu Leu Met Trp Ile Thr Gln Cys | | | | | | |
| 155 | 160 | | | | 165 | |
| TTT CTG CCC GTG TTT TTG GCT CAG CCT CCC TCA GGG CAG AGG CGC | | | | | | 593 |
| Phe Leu Pro Val Phe Leu Ala Gln Pro Pro Ser Gly Gln Arg Arg | | | | | | |
| 170 | 175 | | | | 180 | |
| TAAGCCCAGC CTGGCGCCCC TTCCTAGGTC ATGCCCTCCTC CCCTAGGGAA | | | | | | 643 |
| TGGTCCCAGC ACGAGTGGCC AGTTCATTGT GGGGGCCTGA TTGTTGTCG | | | | | | 693 |
| CTGGAGGAGG ACGGCTTACA TGTTGTTTC TGTAGAAAAT AAAACTGAGC | | | | | | 743 |
| TACGAAAAA | | | | | | 752 |

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 31 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

CACACAGGAT CCATGGATGC TGCAGATGCG G

31

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 32 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

CACACAAAGC TTGGCTTAGC GCCTCTGCC TG

32

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 11 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

Ser Leu Leu Met Trp Ile Thr Gln Cys Phe Leu
5 10

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

Ser Leu Leu Met Trp Ile Thr Gln Cys
5

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

Gln Leu Ser Leu Leu Met Trp Ile Thr
5

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: amino acid

(D) TOPOLOGY: linear
(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

Leu Leu Met Trp Ile Thr Gln Cys Phe Leu
5 10

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

Ala Ala Asp His Arg Gln Leu Gln Leu Ser Ile Ser Ser Cys Leu Gln
5 10 15
Gln Leu

(2) INFORMATION FOR SEQ ID NO: 9:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

Val Leu Leu Lys Glu Phe Thr Val Ser Gly Asn Ile Leu Thr Ile Arg
5 10 15
Leu Thr

(2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

Pro Leu Pro Val Pro Gly Val Leu Leu Lys Glu Phe Thr Val Ser Gly
5 10 15
Asn Ile

(2) INFORMATION FOR SEQ ID NO: 11:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 18 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

Gly Ala Ala Ser Gly Leu Asn Gly Cys Cys Arg Cys Gly Ala Arg Gly
5 10 15
Pro Glu

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

Ser Arg Leu Leu Glu Phe Tyr Leu Ala Met Pro Phe Ala Thr Pro Met
5 10 15
Glu Ala

(2) INFORMATION FOR SEQ ID NO: 13:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

Thr Val Ser Gly Asn Ile Leu Thr Ile Arg Leu Thr Ala Ala Asp His
5 10 15
Arg Gln

(2) INFORMATION FOR SEQ ID NO: 14:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 6 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

Leu Leu Met Trp Ile Thr
5

(2) INFORMATION FOR SEQ ID NO: 15:

- (i) SEQUENCE CHARACTERISTICS:
- (A) LENGTH: 180 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15

Met Gln Ala Glu Gly Arg Gly Thr Gly Gly Ser Thr Gly Asp Ala
5 10 15
Asp Gly Pro Gly Gly Pro Gly Ile Pro Asp Gly Pro Gly Gly Asn
20 25 30
Ala Gly Gly Pro Gly Glu Ala Gly Ala Thr Gly Gly Arg Gly Pro
35 40 45
Arg Gly Ala Gly Ala Ala Arg Ala Ser Gly Pro Gly Gly Ala
50 55 60
Pro Arg Gly Pro His Gly Gly Ala Ala Ser Gly Leu Asn Gly Cys
65 70 75
Cys Arg Cys Gly Ala Arg Gly Pro Glu Ser Arg Leu Leu Glu Phe
80 85 90
Tyr Leu Ala Met Pro Phe Ala Thr Pro Met Glu Ala Glu Leu Ala
95 100 105
Arg Arg Ser Leu Ala Gln Asp Ala Pro Pro Leu Pro Val Pro Gly
110 115 120
Val Leu Leu Lys Glu Phe Thr Val Ser Gly Asn Ile Leu Thr Ile

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 125 | 130 | 135 | | | | | | | | | | | |
| Arg | Leu | Thr | Ala | Ala | Asp | His | Arg | Gln | Leu | Gln | Leu | Ser | Ile | Ser |
| | 140 | | | | | | | 145 | | | | | | 150 |
| Ser | Cys | Leu | Gln | Gln | Leu | Ser | Leu | Leu | Met | Trp | Ile | Thr | Gln | Cys |
| | 155 | | | | | | | 160 | | | | | | 165 |
| Phe | Leu | Pro | Val | Phe | Leu | Ala | Gln | Pro | Pro | Ser | Gly | Gln | Arg | Arg |
| | 170 | | | | | | | 175 | | | | | | 180 |